STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0103039
Owner:	City of Springfield
Address:	PO Box 8368
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Springfield Northwest Wastewater Treatment Plant
Address:	4801 North Highway 13, Springfield, MO 65803
Legal Description:	Outfall #001: NE ¼, Sec. 34, T30N, R22W, Greene County Outfall #002: NE ¼, NE ¼, Sec. 3, T29N, R22W, Greene County
First Classified Stream and ID:	Outfall #001: Little Sac River (P)(01381) Outfall #002: South Dry Sac River (P)(01386)
USGS Basin & Sub-watershed No.:	Outfall #001 (10290106-050004), Outfall #002 (10290106-050002)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – WWTP - SIC #4952
Extended aeration/chlorination/aerobic digester/ sludge is being land applied.
Design population equivalent is 64,000.
Design flow is 6.4 MGD.
Actual flow is 3.5 MGD.
Design sludge production is 1,152 dry tons/year.

Outfall #002 – WWTP - SIC #4952
Peak flow settling basin/chlorination.
Design flow is 4.0 MGD.
Flow is dependent upon rainfall.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

August 9, 2002
Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

August 8, 2007
Expiration Date

Jim Hull, Director of Staff, Clean Water Commission

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	once/day	24 hr. total
Biochemical Oxygen Demand$_5$***	mg/L		30	20	once/weekday**	24 hr. composite
Total Suspended Solids***	mg/L		30	20	once/weekday**	24 hr. composite
Ammonia as N (Seasonal)	mg/L			****	once/weekday**	grab
Fecal Coliform*****	#/100mL	1000		400	once/weekday**	grab
Total Residual Chlorine (Note 6)	mg/L	0.01		0.01	once/weekday**	grab
Dissolved Oxygen	mg/L	******		******	once/weekday**	grab
pH – Units	SU	*******		*******	once/weekday**	grab
Arsenic, Total Recoverable	µg/L	22		20	once/month	24 hr. composite
Chromium, Total Recoverable	µg/L	47		42	once/month	24 hr. composite
Copper, Total Recoverable	µg/L	32		29	once/month	24 hr. composite
Lead, Total Recoverable	µg/L	22		20	once/month	24 hr. composite
Nickel, Total Recoverable	µg/L	550		500	once/month	24 hr. composite
Zinc, Total Recoverable	µg/L	380		345	once/month	24 hr. composite

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE September 28, 2002.

Total Toxic Organics (Note 1)	µg/L	********		********	once/quarter (Note 5)	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2002. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Whole Effluent Toxicity (WET) Test	% Survival	See Special Conditions			once/year in August	24 hr. composite
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE October 28, 2003.						
Outfall #002						
Flow (Note 2)	MGD	*		*	Note 4	24 hr. total
Biochemical Oxygen Demand$_5$	mg/L		45		Note 4	grab
Ammonia as N	mg/L	*		*	Note 4	grab
Total Suspended Solids	mg/L		45		Note 4	grab
Fecal Coliform*****	#/100mL	*		*	Note 4	grab
pH - Units	SU	*******		*******	Note 4	grab
Influent Monitoring						
Biochemical Oxygen Demand$_5$	mg/L		*	*	once/week	24 hr. comp.
Total Suspended Solids	mg/L		*	*	once/week	24 hr. comp.
Fecal Coliform	#/100mL	*		*	once/week	grab
Ammonia as N	mg/L		*	*	once/week	grab
pH – Units	SU	*		*	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE September 28, 2002.						
Number of Discharges/ Quarter	report	*				report
Arsenic, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Chromium, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Copper, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Lead Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Nickel Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Zinc, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2002. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Influent Monitoring (continued)						
Boron, Total Recoverable	mg/L	*		*	once/quarter (Note 5)	grab
Cyanide, Amenable to Chlorination	mg/L	*		*	once/quarter (Note 5)	grab
Total Toxic Organics (Note 1)	mg/L	*		*	once/quarter (Note 5)	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE October 28, 2002.						
Downstream Instream Monitoring (Note 3)						
Flow	MGD	*		*	once/month	instantaneous estimate
Fecal Coliform	#/100mL	*		*	once/month	grab
Temperature	°F	*		*	once/month	grab
pH – Units	SU	*		*	once/month	grab
Ammonia as N	mg/L	*		*	once/month	grab
Cyanide, Amenable to Chlorination	mg/L	*		*	once/month	grab
Dissolved Oxygen	mg/L	*		*	once/month	grab
Arsenic, Dissolved	mg/L	*		*	once/month	grab
Cadmium, Dissolved	mg/L	*		*	once/month	grab
Chromium, Dissolved	mg/L	*		*	once/month	grab
Copper, Dissolved	mg/L	*		*	once/month	grab
Nickel, Dissolved	mg/L	*		*	once/month	grab
Lead, Dissolved	mg/L	*		*	once/month	grab
Zinc, Dissolved	mg/L	*		*	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE September 28, 2002. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						

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A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.
** Once each weekday means: Monday, Tuesday, Wednesday, Thursday, and Friday.
*** This facility is required to meet a removal efficiency of 85% or more.
**** Ammonia as N is limited to a monthly average of 2 mg/L during the period May 1 through October 31 and 3 mg/L during the period November 1 through April 30.
***** Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.
****** Dissolved oxygen shall be maintained at a level equal to or above 6.0 mg/L or 80% of saturation, whichever is least.
******* pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
******** The permittee shall monitor and report the effluent concentration for these parameters. The Missouri Department of Natural Resources can reopen this permit to eliminate the monitoring requirements, or establish specific effluent limits. These modifications would be based on the monitoring data and one or more of the following:

(a) Results of toxicity testing conducted by or for the Missouri Department of Natural Resources on the effluent.
(b) Results of toxicity testing conducted by or for the permittee and approved by the Missouri Department of Natural Resources.
(c) Missouri Water Quality Standards in effect for these parameters.

Note 1 – See Total Toxic Organics Page.

Note 2 – All wastewater flows below 6.4 MGD shall be routed and treated as Outfall #001. Outfall #002 shall only be used for discharge when precipitation causes the incoming wastewater flows to exceed the capacity of #001 and the storage capacity of #002.

Note 3 – Stream monitoring shall occur below the Highway 13 bridge below the confluence of the Little Sac and South Dry Sac River in the NW ¼, Sec. 35, T30N, R22W, Greene County and at the Farm Road 129 bridge in the SE ¼, SE ¼, Sec. 28, T30N, R22W, Greene County.

Note 4 – Samples shall be collected of each discharge event.

Note 5 – Sample once per quarter in the months of January, April, July, and October.

Note 6 - This permit contains a Total Residual Chlorine (TRC) limit.

a. If the TRC limit in this permit is 0.01 mg/L or 0.2 mg/L, you must use an analytical method that has a quantification limit of no greater than 0.05 mg/L TRC. For reporting purposes on the discharge monitoring report (DMR), all analytical values below 0.05 mg/L shall be reported as "<quantlim." All analytical values at or above the quantification limit of 0.05 mg/L shall be reported as the measured value. The permittee shall report the quantification limit in the remarks section of the DMR.

The average monthly effluent values for TRC will be determined by assuming that analytical results below the quantification limit are equivalent to 0 mg/L when calculating the monthly average.

The daily effluent value will be considered equal to 0 mg/L if it is below the quantification limit.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 6 - Total Residual Chlorine (TRC) (continued)

b. If the TRC limit in this permit is 1.0 mg/L; you must use an analytical method with a quantification limit between 0.2 and 0.5 mg/L. All analytical values below the quantification limit shall be reported as "<quantlim." All analytical values at or above the quantification limit shall be reported as the measured value.

The average monthly effluent values for TRC will be determined by assuming that analytical results below the quantification limit are equivalent to 0 mg/L when calculating the monthly average.

The daily effluent value will be considered equal to 0 mg/L if it is below the quantification limit.

c. Disinfection is required year-round unless the permit specifically states that "Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31." If your permit does not require disinfection during the non-recreational months, do not chlorinate in those months.

d. Do not chemically dechlorinate if it is not needed to meet the limits in your permit.

e. If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 mg/L" TRC.

C. SPECIAL CONDITIONS

1. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
Outfall #001	100%	Annually	24 hr. comp.	August

a. Test Schedule and Follow-Up Requirements

(1) Perform a single-dilution test in the months and at the frequency specified above.

If the effluent passes the test, do not repeat the test until the next test period. Submit results with the annual report.
If the effluent fails the test, a multiple dilution test shall be performed within 30 days, and biweekly thereafter, until one of the following conditions are met:

(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(2) The permittee shall submit a summary of all test results for the test series to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 days of the third failed test. DNR will contact the permittee with initial guidance on conducting a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE). The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPCP within 60 days of the date of DNR's letter. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

C. SPECIAL CONDITIONS (continued)

1. Whole Effluent Toxicity (WET) tests (continued)

a. Test Schedule and Follow-Up Requirements (continued)

(3) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(4) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(5) In addition to the WET test summary report required in part (2), all failing test results shall be reported to DNR within 14 days of the availability of the results.

(6) All WET test results for the reporting period shall be summarized and submitted to DNR by the end of the following October. When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

b. PASS/FAIL procedure and effluent limitations

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.

(2) To pass a multiple-dilution test:

(a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; or,
(b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

c. Test Conditions

(1) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing should come from cultures reared for the purpose of conducting toxicity tests and should be cultured in a manner consistent with the most current USEPA guidelines. All test animals should be cultured as described in EPA-600/4-90/027.

(2) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.

(3) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

C. SPECIAL CONDITIONS (continued)

c. Test Conditions (continued)

(4) Tests should be initiated immediately after the sample is collected, but tests must be initiated no later than 36 hours after sample collection.

(5) Single-dilution tests will be run with:

(a) Effluent at the AEC concentration;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(6) Multiple-dilution tests will be run with:

(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

2. The department has approved the construction permit program to regulate and approve construction of a sanitary sewer in the area tributary to this wastewater treatment plant. This approval may be revoked by the department if the city sewage collection, transportation, or treatment facilities reach their design limitations, if the facility falls into chronic noncompliance with the permit, or if the city fails to follow the terms and conditions of the approved program.

When any of the above mentioned conditions are met, the permittee will be notified and the construction permit authorization shall be terminated.

3. The permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference.

4. The permittee shall submit to this Department the Wastewater Treatment Systems Operation Scope Monitoring Report as outlined in 10 CSR 20-9.010. The permittee shall submit the above required report monthly and the report shall be due no later than the 28th day of the month following the reporting period.

5. The permittee shall maintain records of all wet weather bypassing at the collection system lift stations and the sewage treatment plant. These records shall document the duration and dates of the bypassing, the magnitude of the precipitation event causing the bypassing and the route of flow of the bypass (i.e. bypassed to final clarifier or receiving stream). Incidents of bypassing with the above information shall be included in narrative form with the discharge monitoring reports.

6. The permittee shall submit a report semi-annually with the Discharge and Monitoring Reports which address measures taken to locate and eliminate sources of infiltration and inflow into the city’s collection system.

7. All outfalls must be clearly marked in the field.

8. 10. Report as no-discharge when a discharge does not occur during the report period.

C. SPECIAL CONDITIONS (continued)

9. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

10. Changes in Discharges of Toxic Substances

   The permittee shall notify the Director as soon as it knows or has reason to believe:
   (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
      (1) One hundred micrograms per liter (100 µg/L);
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established in Part A of the permit by the Director.
   (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

11. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities
   (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
   (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

C. SPECIAL CONDITIONS (continued)

12. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
    (a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
    (b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
    (c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
    (d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
    (e) There shall be no significant human health hazard from incidental contact with the water;
    (f) There shall be no acute toxicity to livestock or wildlife watering;
    (g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
    (h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

Total Toxic Organics

Acenaphthene
Acrolein
Acrylonitrile
Benzene
Benzidine
Carbon Tetrachloride (tetrachloromethane)
Chlorobenzene
1,2,4-trichlorobenzene
Hexachlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
Hexachloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Bis (2-chloroethyl) ether
2-chloroethyl vinyl ether
N-nitrosodi-n-propylamine
Pentachlorophenol
Phenol
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
(dibenzo(a,h)anthracene)
Di-n-butyl phthalate

Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
1,2-benzanthracene (benzo(a)anthracene)
Benzo(a)pyrene (3,4-benzopyrene)
3,4-benzofluoranthene (benzo(b)fluoranthene)
11,12-benzofluoranthene (benzo(k)fluoranthene)
Chrysene
metabolites)
Anthracene
1,12-benzoperylene (benzo(ghi)perylene)
Fluorene
2-chloronaphthalene
2,4,6-trichlorophenol
Parachlorometa cresol
Chloroform (trichloromethane)
2-chlorophenol
1,2-dichlorobenzene
1,3-dichlorobenzene
hexachlorocyclohexane)
1,4-dichorobenzene
3,3-dichlorobenzidine
1,1-dichloroethylene
1,2-trans-dichloroethylene
2,4-dichlorophenol
1,2-dichloropropane (1,3-dichloropropane)
2,4-dimethylphenol
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Ethylbenzene
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis (2-chloroisopropyl) ether
Bis (2-chloroethoxy) methane
Methylene Chloride (dichloromethane)
Methyl Chloride (chloromethane)
Methyl bromide (bromomethane)
Bromoform (tribromomethane)
Dichlorobromomethane
Chlorodibromemethane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dintro-o-cresol
N-nitrosodimethylamine
N-nitrosodiphenylamine
Phenanthrene
1,2,5,6-dibenzanthracene

Indeno (1,2,3-cd) pyrene
(2,3-o-phenylene pyrene)
Pyrene
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl Chloride (chloroethylene)
Aldrin
Dieldrin
Chlordane (technical mixture and

4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide (BHC

Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC (PCB polychlorinated biphenyls)
PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)
PCB-1248 (Arochlor 1248)
PCB-1260 (Arochlor 1260)
PCB-1016 (Arochlor 1016)
Toxaphene